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Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

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Capital Management and Budgeting in the Public Sector

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Table of Contents

Preface	XV
----------------------	----

Acknowledgment	XX
-----------------------------	----

Section 1 **Capital Management and Budgeting in Developed Economies**

Chapter 1

A Systematic Public Capital Management and Budgeting Process	1
<i>Arwiphawee Srithongrung, University of Illinois at Springfield, USA</i>	
<i>Juita-Elena (Wie) Yusuf, Old Dominion University, USA</i>	
<i>Kenneth A. Kriz, University of Illinois at Springfield, USA</i>	

Chapter 2

The Case of Public Capital Budgeting and Management Processes in the United States	23
<i>Natalia B. Ermasova, Governors State University, USA</i>	
<i>Carol Ebdon, University of Nebraska at Omaha, USA</i>	

Chapter 3

The Case of Public Capital Budgeting and Management Process in Germany	49
<i>Natalia B. Ermasova, Governors State University, USA</i>	

Section 2 **Capital Management and Budgeting in Transitioning Economies**

Chapter 4

Capital Budgeting, Infrastructure, and Capital Investment in the Republic of Uzbekistan.....	74
<i>Tatyana Guzman, Cleveland State University, USA</i>	

Chapter 5

Capital Budgeting and Public Investment Projects in Ukraine	93
<i>Olha Krupa, Seattle University, USA</i>	

Chapter 6

Public Capital Budgeting and Management Process in Russia..... 113

Natalia B. Ermasova, Governors State University, USA

Polina Ermasova, DePaul University, USA

Chapter 7

Public Capital Budgeting and Management Process in Moldova 134

Erica Ceka, Northern Illinois University, USA

Chapter 8

Capital Management and Budgeting Processes in Albania 157

Jane Beckett-Camarata, Pennsylvania State University – Harrisburg, USA

Section 3

Capital Management and Budgeting in Other Economies

Chapter 9

Infrastructure Development in Burkina Faso: The Story of Public Capital Budgeting 181

Kouliga Koala, Old Dominion University, USA

Joshua Steinfeld, Old Dominion University, USA

Chapter 10

Thai Public Capital Budget and Management Process 206

Arwiphawee Srithongrung, University of Illinois at Springfield, USA

Kenneth A. Kriz, University of Illinois at Springfield, USA

Chapter 11

Capital Management and Budgeting Practices in Republic of Korea..... 236

Jiseul Kim, University of Nebraska at Omaha, USA

Chapter 12

Capital Management and Budgeting in Taiwan 258

Wei-Jie Liao, University of Nebraska at Omaha, USA

Nai-Ling Kuo, National Taiwan University, Taiwan

Chapter 13

The Vietnam Capital Management and Budgeting Case Study 280

Lien Nguyen, Old Dominion University, USA

Meagan M. Jordan, Old Dominion University, USA

Thuy Thi Nguyen, Ministry of Finance of Vietnam, Vietnam

Section 4
Conclusion

Chapter 14
Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior 311
 Arwiphawee Srithongrung, University of Illinois at Springfield, USA
 Juita-Elena (Wie) Yusuf, Old Dominion University, USA

Compilation of References 337

About the Contributors 372

Index..... 377

Chapter 14

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

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ABSTRACT

This chapter evaluates the 12 countries' capital management practices according to the systematic public capital management and budgeting process described in Chapter 1. The chapter characterizes and classifies the management practices of the twelve countries based on the authors' evaluation using the case study descriptions. The authors offer some initial observations based on comparisons across the case study countries and analysis of relationships between capital management and budgeting practices and political, economic, and public sector variables. The chapter proposes a tentative theory of public investment behavior and offers five propositions regarding the factors driving different practices across the case study countries and the consequences of a systematic capital management and budgeting process.

INTRODUCTION

In addition to describing how public capital management and budgeting is practiced in different countries, another purpose of this book is to propose a tentative theory of public investment to add to the public finance literature. The previous chapters describe public capital management and budgeting practices in twelve case study countries. An understanding of the differences in public capital budgeting and management practices across the twelve countries should provide a foundation toward theory building in public capital management to explain factors that contribute to variations in public capital management. The

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Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

individual country case studies presented in this book suggest that capital management and budgeting practices vary regardless of geographical location and government regimes.

This chapter evaluates the twelve countries' capital management practices according to the systematic public capital management and budgeting process described in Chapter 1. The chapter then characterizes and classifies the management practices of the twelve countries based on the editors' evaluation using the case study descriptions. Finally, based on existing frameworks and theories from public finance and entrepreneurial finance (such as information asymmetry, expected utility, transaction cost, prospect theory and investment bias) the chapter proposes a tentative theory of the factors driving different practices across the case study countries.

Note that the tentative theory proposed in this chapter is just a starting point in developing public capital management theory at the international level. This proposed theory needs a larger sample of countries to improve its descriptive and predictive capacity. Despite the important roles of public infrastructure on a country's economic growth, less is known regarding the causes of different capital management practices in providing and arranging public infrastructure systems. Thus, we hope that this book will inspire comparative public administration and international development theorists to build a stronger knowledge base.

The Systematic Process as a Yardstick: Recapitulation

As described in Chapter 1, the normative public finance literature recommends systematic public capital management and budgeting practices for a public infrastructure system that is useful and responsive to the public's capital needs and has reasonable cost compared to its useful life. The systematic process includes long-term capital planning, budgeting and financial management, centralized execution and project management, and infrastructure maintenance. Long-term capital planning includes establishing strategic and fiscal plans based on a government jurisdiction's comprehensive planning and public infrastructure need analyses. The comprehensive plan is a master plan that spells out broad policies for the community's long-term land use, expansion, and containment. The strategic plan describes policies and management practices that will make the best use of available resources to implement the community's vision as stated in the master plan. Long-term fiscal planning is about projecting revenue and expenditure in order to understand future capital financing capacity and capital needs. Long-term fiscal planning may not and cannot be completely accurate given that projections will be subject to error, especially for those in the far out-years. However, the projected results give a rough idea in terms of resources available and the future of a community. Capital inventory and needs analysis identify gaps between existing public infrastructure and future needs based on community growth and socio-economic profiles. If these planning practices are implemented, the community should have a Capital Improvement Program (CIP) which is a comprehensive list of capital projects a community will need within the next 5-7 years along with plans to finance the projects and the impacts of the projects on future budgets. This component will enhance *allocative efficiency* of public capital investment since the systematic review suggests what projects to invest in based on the community's needs and vision, and how to finance the projects based on available resources and the community's projected growth.

The second component is budgeting and financial management, which includes having a separate capital budget, debt management policies, and capital financing policies. The separate capital budget contains appropriation and recommendations for capital projects along with available resources. The

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

recommended capital projects in the capital budget are usually the projects listed in the first-year of the CIP. Given that capital needs tend to exceed available resources, the first-year CIP projects will need to be systematically prioritized using such techniques as cost-benefit analyses or project ranking systems. The separate capital budget is useful in that it provides a special review of the recommended capital projects relative to available capital financing sources in the next fiscal year. If capital projects are included in the operational budget, the two types of public spending (i.e., investment and consumption) will compete for limited resources. With a separate capital budget (i.e., a dual budgeting system) decisionmakers and appointed officials can balance between consumption and investment. In this second component of the systematic capital management and budgeting process, sound financial management practices including debt capacity analysis, long-term budget forecasts, and maintaining some operational reserve funds should be adopted and practiced in order to help enhance the community's credit rating, thus yielding low capital costs. Overall, this component will enhance *scale economy* for public investment since the recommended practices ensure that the community invests in its public infrastructure at the optimal level commensurate with current and future financing capacity as well as future needs.

The third component is centralized execution and project management, which emphasizes establishing a central unit or agency responsible for project management, monitoring contractor performance, and executing the capital budget. The centralized capital project management agency maintains, updates, and discloses the capital budget status indicating how much appropriated funds have been expended and how much are left. The managers in the centralized capital project management agency should perform simple internal audits such as budget variance analysis to identify whether capital spending is implemented as planned. The focus is on preventing waste, fraud, and cost overruns that can severely affect financial status of a jurisdiction. The goal of this component is to ensure that public infrastructure is acquired at the lowest cost possible (*economic efficiency*).

The last component of the systematic capital management and budgeting process focuses on maintenance planning and maintenance funding. Maintenance planning involves asset management and determining what public facilities should be repaired or replaced based on physical condition and current and future use. Major repairs may be considered when it will extend the facility's useful life for a significant number of years. Replacement may be considered when repair will not yield cost savings and demands are projected to increase. Maintenance funding involves setting aside funds to pay for repair and replacement. These two activities help government avoid infrastructure backlogs and reduce the need to finance repair and replacement projects on an emergency basis.

EVALUATION OF THE CASE STUDY COUNTRIES' MANAGEMENT PRACTICES

As described in the previous chapters, public capital management and budgeting practices vary from country to country regardless of their geographical locations and government regimes. In this section, the systematic capital management and budgeting process described in Chapter 1 is used as a yardstick to evaluate the twelve case study countries' practices.

Table 1 presents performance evaluation results in which the case study countries' capital management and budgeting practices are compared with the normative practices in the four components of the systematic capital management and budgeting process. The evaluations were performed according to the rubric described below.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Table 1. Evaluation of case study countries' capital management and budgeting practices

Country	Component				Total Score
	Long-term Capital Planning	Capital Budgeting and Financial Management	Centralized Execution and Project Management	Infrastructure Maintenance	
Albania	Fair	Fair	Excellent	Poor	9
Burkina Faso	Fair	Poor	Poor	Poor	5
Germany	Good	Good	Good	Fair	11
Korea	Fair	Good	Excellent	Good	12
Moldova	Fair	Fair	Fair	Good	9
Russia	Fair	Poor	Poor	Poor	5
Taiwan	Fair	Good	Excellent	Poor	10
Thailand	Fair	Good	Fair	Good	10
Ukraine	Poor	Fair	Poor	Fair	6
United States (Subnational)	Good	Good	Good	Poor	10
Uzbekistan	Poor	Fair	Good	Fair	8
Vietnam	Good	Excellent	Fair	Good	12

Source: Evaluation by the authors

- An '*excellent*' rating suggests that *all* of the recommended activities in a component are adopted and fully implemented. While there may be small deviations from the normative practices, such deviations do not severely affect the quality of management. The important practices across the four components of the systematic process include having a CIP (component 1), having a separate capital budget (component 2), practicing centralized project management and monitoring (component 3), and practicing maintenance planning and funding (component 4). For any component, if the important practices are designated by written policies or laws and are reported by the case study authors as being implemented, an '*excellent*' rating is assigned. These written rules, policies, and laws ensure that the recommended practices are adopted and implemented regardless of fiscal or political conditions. The authors of the case studies may mention political involvement and even some corruptions, but as long as the practices are designated by laws, such negative aspects may have only a marginal effect.
- A rating of '*good*' suggests that the *majority* of the systematic practices recommended in a component are adopted and fully implemented. The adopted practices are well adhered to the systematic capital management and budgeting process and are clearly stated in a country's management policies or laws. Only a minority of practices deviate from those of the systematic process and are not designated by written policies or laws, and as a result, such practices may or may not be executed depending on the current administration and available expertise. The case study authors may mention political intervention in the resource allocation process or some corruption in implementation, which may affect the quality of capital management and budgeting.
- A '*fair*' rating suggests that a *minority* of the systematic practices recommended for a component are adopted. The adopted practices may not completely adhere to the systematic capital man-

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

agement and budgeting process and are not clearly stated in a country's management policies or required by laws. However, the adopted practices as described by the case study authors are considered evidence of implementation. Most of the practices in the component deviate from those of the systematic process and are not designated by written policies or laws. As a result, the important practices may or may not be executed depending on current administration and available expertise. Sometimes the authors explicitly mention lack of administrative and management expertise as an obstacle to completely implementing the recommended practices. The authors may mention political intervention in the resource allocation process or high levels of corruptions in implementation. Such practices, as documented in the country case studies, appear to significantly affect the efficiency of public capital spending.

- A rating of '*poor*' suggests that *none* of the systematic practices recommended in a component are adopted and implemented. Laws and management policies governing important practices in the component do not exist and there is no description by the case study authors of the implementation of such practices. The authors primarily mention the lack of administrative and management practices, high levels of corruptions, and high degrees of political involvement in the budgeting process. Such negative aspects likely affect both the quality of the public capital management process and efficiency of public capital spending, especially since countries with poor capital management practices tend to obtain capital projects with relatively high costs due to corruption or mismanagement.

Each element of the rating scale was given a corresponding score; excellent, good, fair and poor were given scores of 4, 3, 2, and 1, respectively. For each country a total score was calculated across all components (shown in the last column of Table 1). The maximum points possible is 16, indicating that the country's process fully adheres to the systematic capital management and budgeting process discussed in Chapter 1. The minimum total point possible of 4 indicates that the country's process deviates extensively from normative practices. For these countries, political issues, lack of administrative expertise, and corruption can easily penetrate the process.

As presented in Table 1, Vietnam and Korea received the highest scores with 12 total points, followed by Germany (11 points). This indicates close adherence to the systematic capital management and budgeting process recommended by the literature. Taiwan, Thailand and USA had 10 total points. At the other end, Burkina Faso and Russia had the lowest scores (5 points). Based on these scores, we can organize the countries into quartiles:

- **Fourth quartile:** Vietnam, Korea, and Germany.
- **Third quartile:** USA, Taiwan, and Thailand.
- **Second quartile:** Albania, Moldova, and Uzbekistan.
- **First quartile:** Ukraine, Russia and Burkina Faso.

Note that even within the quartiles, the countries may not have the same government regime or may not be geographically located in close proximity. For example, in the fourth quartile Vietnam and Korea are both in Asia, but the former is a communist state while the latter is a presidential republic. In the third quartile, the United States is a federal republic located on the American continent while Thailand and Taiwan are in Asia. Thailand, while under a Monarchy System where the national government has the most power, is presently under military regime. Taiwan is a semi-presidential republic. Similar differ-

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

ences exist across the remaining groups. These simple comparisons suggest that the level of sophistication in public capital management and budgeting practices may not be simply explained by a country's geographical location or government regime. But, if the geographical location and government regimes do not explain capital management and budgeting practices, then what is driving the differences shown in Table 1? This chapter is focused on tentatively answering this question.

Long-Term Capital Planning

For the long-term capital planning component of the systematic process, Vietnam, USA, and Germany were rated as *good*; Albania, Burkina Faso, Korea, Moldova, Russia, Taiwan, and Thailand were rated as *fair*; and Ukraine and Uzbekistan were rated as *poor*. The countries rated *good* have a CIP in which physical planning is well integrated with fiscal planning. The CIP in Vietnam and Germany are designated by public investment laws. Vietnam's CIP, referred to as the Public Investment Program, lists and classifies capital projects following Articles 7-10 of the Public Investment Act of 2014. The USA and Germany have federal systems in which the national governments distribute capital planning and budgeting powers to subnational levels. While the United States does not have a CIP at the national level, Germany has a national CIP that is designated by law (The Act to Promote Economic Stability and Growth) that requires the government to establish a 5-year rolling capital plan based on budget forecasts. Furthermore, as required by law, the German government must present the annually rolling CIP to the Ministry of Finance so that the capital project plan can be actualized instead of being just a wish list.

The majority of the state and local governments in the USA have a CIP (Ebdon, 2004; Ermasova, 2013). Although these CIPs are not designated by laws like those of Vietnam and Germany, they tend to be based on long-term fiscal planning (Ebdon, 2004). Like the USA and Germany, the Vietnamese government uses budget forecasts in long-term planning by integrating forecasts into comprehensive plans. However, unlike those of subnational governments in the USA, the long-term capital plans in Germany and Vietnam are not integrated. Instead, they have multiple sectoral plans based on the numbers of infrastructure sectors or service functions (i.e., transportation, water and sewerage, energy). Such unintegrated plans may result in duplicative and uncoordinated projects. Having sectoral instead of integrated capital plans is the only flaw keeping Vietnam and Germany from receiving an *excellent* rating for this component. However, despite not having integrated plans, Germany has a National Development Policy for executing and coordinating investment projects across the Länders and municipality levels. Furthermore, in practice, the impacts of capital projects (e.g., future operational savings or increasing future operational costs) are incorporated into the CIP and approved by the federal Ministry of Finance. Capital resources are equally allocated among the Länders and the national and subnational levels. Furthermore, Germany is the only case study country study that conducts capital needs analysis based on future demands.

Among the countries rated as *fair* (Albania, Burkina Faso, Korea, Moldova, Russia, Taiwan, and Thailand), only Korea and Burkina Faso have an informal CIP that is not required by law. Korea's CIP (the Comprehensive National Territorial Plan or CNTP), has been used since 1971, but does not integrate capital planning with fiscal planning. The Korean government practices medium-term expenditure forecast and integrates its results into an operational budget plan. From the case study, however, it is unclear whether forecasting results are integrated into the CNTP. Burkina Faso's CIP, also known as the Public Investment Program, is required by international donors, prepared based on simple fiscal capacity projections (i.e., donors' plans), and is used as a tool to consolidate international aid.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

All countries in the *fair* category, with the exception of Russia and Burkina Faso, have comprehensive plans, but the governments seem to have difficulty integrating plans across sectors and sorting through the responsibility for public infrastructure provision between national and subnational levels. The latter may be a consequence of having a strong national government or lacking expertise at the subnational governments. For example, the author of the Korea case study notes that Korean subnational governments do not have much autonomy in public administration functions.

To illustrate this point, Korea has five types of comprehensive plans: the CNTP, the Seoul Metropolitan Area Readjustment Plan, Metropolitan Area Plan, City Management Plan and Basic City Plan. Thailand has at least eight comprehensive infrastructure plans including the Transportation Infrastructure Plan (2015-2022), Second Industrial Logistics Master Plans (2017-2021), Thailand Power Efficiency Plan (2015-2016), Alternative Energy Development Plan (2015-2036), Digital Economy and Society Development Plan (2015-2036), Metropolitan Waterworks Authority Water Supply Infrastructure Development Plan (2018-2047), and Third Provincial Waterworks Authority Strategic Plan (2017-2021).

Moldova, Taiwan and Albania have more integrated comprehensive plans. Moldova's current long-term comprehensive plan, its National Development Strategy "Moldova 2020," covers two sectors – transportation and energy – and spells out the objectives of infrastructure development. The Albanian comprehensive plan integrates all sectors into the plan. However, the comprehensive plan is part of the strategic plan which has a shorter time-frame and, as a result, the comprehensive plan automatically adopts this short-term framework and is not useful in spelling out long-term vision and goals.

Taiwan has a unique comprehensive planning practice in that it sorts public infrastructure provision between national and subnational levels. As implied by the case study author, this practice may be a consequence of the nationally-elected officials' need to be involved in the country's long-term infrastructure planning based on their campaign promises and re-election expectation. The President or Prime Minister prepares the Capital Improvement Program (e.g., Prime Minister Chiang Ching-kuo's Ten Major Construction Projects 1974-1979; President Ma Ying-jeou's i-Taiwan 12 Projects 2009-2011) that cover only large-scale capital projects and are associated with political campaign promises. These plans seem to have relatively short time frames. In addition, the Taiwanese national government is responsible for multi-year comprehensive planning (covering relatively large-scale capital projects) such as the Economic Development and National Development Plans. Meanwhile, local governments have autonomy to prepare their own comprehensive plans and have the capacity to finance their own smaller-scale capital projects. Like Albania, Taiwan's comprehensive planning is contained within strategic planning, resulting in a comprehensive plan that does not address long-term vision and public infrastructure needs.

Burkina Faso and Thailand each have a separate strategic plan that applies economic analyses to make decisions about social and economic development policies (which tend to involve public infrastructure). The Moldovan Ministry of Finance develops a strategic plan that identifies how budgetary resources should be used (e.g., budget allocation should be related to the country's strategic priorities). However, none of the case study countries categorized as *fair* in terms of long-term capital planning conduct capital needs analysis.

Uzbekistan and Ukraine were rated as *poor*. Based on the case study, Ukraine appears to not adopt any long-term capital planning activities recommended by the systematic process. The case study author notes that the country has a long wish list of capital projects but since comprehensive planning, long-term fiscal planning, and strategic planning do not exist, it is difficult to realize the wish list. Uzbekistan is a strong authoritarian state, and its plans tend to be developed based on the President's views. The Investment Program of the Republic of Uzbekistan has a one-year time frame; the plan is revised annually,

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

signed by the President and becomes law. Uzbekistan has an informal CIP that is produced infrequently since it is not required by law. The most recent CIP was issued in 2010 and covered project needs for the period 2011-2015. Periodically, the President issues a large-scale capital improvement program as a special CIP that is signed into law. The most recent special CIP (Measures on Continuing Improvement of Ameliorated Condition of Irrigated Lands and Rational Usage of Water Resource: 2013-2017) focused only on the water sector and was not comprehensive.

Budgeting and Financial Management

For the budgeting and financial management component, Vietnam received an *excellent* rating, exhibiting the best practices among all case study countries. Vietnam has a dual budget system including separate capital and operational budgets. The country has established financial policies related to debt affordability analysis, designating that public infrastructure be financed by domestic bonds (rather than international capital markets), and setting aside budgetary resources for debt services incurred for public infrastructure acquisition. Although the country presently uses only a small amount of long-term debt, the policy clearly sets a foundation for future capital spending that corresponds with the country's growth and debt capacity. The State Budget Law of 2015 mandates that Vietnamese central and local governments maintain an operating reserve of 2% to 4% of the total budget to cover natural disasters and emergencies. This policy implies that the Vietnamese government is putting some effort into maintaining financial discipline. Project prioritization criteria for projects financed by domestic bonds are designed to improve the standard of living. The criteria, listed according to their priority order, include capital projects serving those in mountainous areas, those who are ethnic minority, and those in remote areas; capital projects supporting health and hospital services; transportation projects; irrigation projects; and education projects. The authors of the Vietnam case study note that although the prioritization criteria are set, project selection and prioritization is still affected by politics. However, we note that the establishment of management institutions and laws may alleviate some concerns regarding politics and corruptions. The Vietnamese government is innovative in its approach to capital financing. Through the Vietnam Development Bank, the government borrows money supplies from the domestic capital market and then allocates directly to local governments and state-owned enterprises for capital projects. The case study authors note that this motivates private partners to work with local governments and, as a result, local governments can invest in more capital projects. PPPs are used often in Vietnam, especially for information technology and electricity-related projects. As mentioned in the case study, Vietnam does have corruption and an administrative expertise problem; however, in our view, the country is putting a good amount of effort into establishing systematic capital budgeting and financial management practices.

Germany, Korea, Taiwan, Thailand and the United States were rated *good* in terms of budgeting and financial management. Taiwan and Thailand are similar in that although they do not have separate capital budgets, their capital resource allocation is conducted through a built-in capital budgeting process. The built-in capital budgeting process is supported by a combination of traditional practices and some laws (e.g., a law requiring debt capacity analysis). The laws are helpful in shielding capital spending from competing with operational programs. Both countries include small-scale capital projects (e.g., less than THB 1 million for Thailand) in the annual budgeting process so these projects must compete for resources with operational programs. Large-scale capital projects have their own approval and financing paths. In Taiwan large capital projects are proposed and approved separately from the annual capital budgeting process and financed through long-term debt and a multi-year process. In Thailand, large capital proj-

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

ects are financed through long-term debt issued by the Ministry of Finance and debt proceeds are sent directly to the responsible ministries and state-owned enterprises. Budgeting and financial management practices are better in Taiwan compared to Thailand because the Taiwanese national government has special capital project funds to finance large-scale capital projects allowing the government to pay some project costs with current revenue. Such practices can significantly reduce the amount of debt.

Given that these built-in practices tend to allow flexibility in capital financing, both Taiwan and Thailand have relatively strong financial management laws compared to other case study countries. In Taiwan, Article 5 of the Public Debt Management Act designates that national debt must not exceed 40.6% of the country GDP and local governments cannot incur debt in excess of 50% of total annual expenditure proposed in their budgets. Article 10 of the same act mandates that governments must periodically publicly disclose their debt. In Thailand, the Fiscal Discipline Act of 2018 designates that the national government must appoint fiscal committees that mainly comprise of Ministry of Finance Directors, Bureau of Budget Director, Bank of Thailand's President and board members, and National Social and Economic Development board members to determine annual debt amounts based on long- and medium-term budget forecasts. The act does not require public disclosure of debt. Furthermore, this act allows local governments, public agencies, and state-owned enterprises to borrow directly from international and domestic capital markets without reporting to or sending debt proceeds to the Ministry of Finance. While this practice expedites capital project acquisition, it is not transparent and the lack of consolidation of public debt makes it difficult to monitor. The Fiscal Discipline Act of 2018 creates some opaqueness in the country's financial system.

Germany and Korea do not have a separate capital budget, but more than half of state and local governments in the USA have separate capital budgets. In Germany and the USA subnational governments, the executive branches or those responsible for preparing budget documents propose capital projects based on policy priorities. According to the authors of the USA country case study, a majority of state governments have debt limits and practice debt affordability analysis. Germany has public investment funds (from debt proceeds of bond issuances) which attract private partners for PPP projects. The European Stability and Growth Pact requires that Germany's Council of Economic Experts conducts financial forecasts to identify future resources especially those needed for capital projects. In Korea, debt affordability analysis for the central government and local governments is determined by the Ministry of Finance and Ministry of Interior, respectively. According to Korea's Local Finance Act, local governments' debts limit must be annually determined and legislated based on the annual fiscal situations of the jurisdiction.

Among the countries rated as *good*, only Korea has a systematic project prioritization process. At the national level, Korea uses criteria stated in the Preliminary Feasibility Study to systematically prioritize large capital projects. At the local level, the country uses criteria stated in the Local Finance Act. In Taiwan and Germany, the ministries proposing capital projects are responsible for prioritizing their capital projects based on policy priorities of top management and political leaders.

Taiwan and Germany have operational reserves that are designated by law. Taiwan's Article 22 of the Budget Act requires that the national government set aside resources in general revenue funds as budget reserves. The Disaster Prevention and Protection Act of Taiwan requires that local governments prepare reserve funds. In Germany, the Stability and Growth Act requires that the federal government establish reserve funds. According to the author of the Korean case study, operational reserves are designated by law but are not set aside for capital projects.

Albania, Moldova, Ukraine and Uzbekistan are in the same group receiving a rating of *fair* for this component. Albania is the only country in this group with a dual budgeting system and separate capital

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

budget. However, the case study author notes that public capital spending is severely inadequate compared to the country's needs. Furthermore, the capital resource allocation process is severely affected by national politics. The Albanian Prime Minister's Office develops the long-term expenditure forecast (6-7 years) and the Ministry of Finance forecasts medium-term expenditures that are the basis for the CIP. However, Albania severely lacks financial expertise in forecasting and has no laws enforcing good financial practices such as maintaining operational reserves, conducting debt capacity analysis, and enforcing debt limits. As a result, operational reserves, debt affordability analysis, and debt management policies and practices do not exist.

In Moldova, the Public Finance and Fiscal Responsibility Act does not require a separate capital budget; operational spending competes directly with capital spending. The Moldovan and Ukrainian governments similarly lack technical expertise in budget forecasting and have no financial management laws or policies requiring operational reserves, debt affordability analysis, debt limit, and debt disclosure. According to the Moldova case study, the capital project prioritization process appears to be relatively systematic compared to those of Albania and Ukraine. Moldova's government adheres to the country's strategic plan and allocates capital resource based on the predicted usefulness of the projects. However, the national government tends to not distribute powers to its local governments.

Uzbekistan also does not have financial management laws or policies to enforce fiscal discipline, and the country case study does not document the presence of strong financial management practices. The government has a capital financing policy designating that resources in all funds including the General Fund are used as current revenue to finance capital projects while resources in the Fund for Reconstruction and Development (FRD) are used for capital project debt financing, which generally is in the form of commercial bank loans and private sector lending. The Uzbek government combines capital projects serving citizens and those supporting national oil and gas production, which can result in lopsided resource allocation toward national gas and oil production facilities and inadequate capital projects servicing citizens and enhancing quality of life.

Russia and Burkina Faso were assigned ratings of *poor* for their budgeting and financial management practices. Both countries do not have a separate capital budget. They do not have laws or written policies enforcing fiscal discipline or guiding capital financing and debt management. Burkina Faso's public debt is monitored by the West African Economic and Monetary Union, and the country's debt level (37% of GDP) is well below the Union's debt limit (70% of GDP). According to the authors of the Russia case study, the government used to have a formal definition of capital expenditure (as real-estate and other long-term investments that will increase the value of federal properties) and a separate capital budget, but such practices no longer exist. There is no specific information on whether the Russian government systematically prioritizes public capital projects and no information on the overall financial management as it applies to capital expenditures.

Centralized Execution and Project Management

Albania, Korea and Taiwan received *excellent* ratings in this component given that the national governments in these countries centralize the monitoring process for project acquisition. The Korean government manages and monitors capital project acquisition and capital resource disbursement across all acquisition phases to ensure efficiency and prevent waste and fraud. In Albania, Article 65 of the Organic Budget Law designates that the Ministry of Finance prepares and presents budget monitoring results to the Council of Ministers and Legislature on a quarterly basis. The Capital Investment Department and Public

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Investment Management Committees track all capital projects and report budget disbursements to the Ministry of Finance. In addition to the internal fiscal audit, performance auditing is practiced with the Capital Investment Department frequently reviewing the progress of project acquisition and comparing progression against plans. However, these auditing practices apply only to road and highway projects.

Taiwan is the best performer in this group, primarily because it integrates information technology into project management and monitoring. Different ministries, agencies and state-owned enterprises are responsible for project execution, but there is a central Public Construction Committee (PCC) that supervises and monitors project acquisition and capital budget disbursement. In 2001, the PCC established the Public Construction Management Information system which integrates information technology with project execution and monitoring to improve capacity for internal control. Information related to public construction including contractors, contracting amount, budgetary resources and disbursement, expected time to complete, and progress toward completion are periodically updated and available in an online clearinghouse for all approved capital projects. Such progressive practice is important for public scrutiny and centralized monitoring to detect waste and fraud prior to project completion. In terms of contract management Article 18 of the Government Procurement Act requires that the government use open tendering procedures for capital projects valued at or more than NT\$1 million. According to Article 52 of the same act, the contract must be awarded based on the principles of lowest cost or most advantageous tender. These examples show that Taiwanese project execution activities closely conform to those recommended by the systematic process. While the case study authors mention corruption as a possible concern, we note that the laws regarding public procurement and the relatively high degrees of public disclosure for project implementation should alleviate some of the consequences of corruption in procurement processes.

Germany, USA, and Uzbekistan received ratings of *good* for this component. The Budget Code of the Republic of Uzbekistan requires that the Ministry of Finance monitor and track all projects financed by the national budget on a quarterly basis. The Ministry compiles capital disbursement and project acquisition information by requiring all agencies receiving resources from national budgetary funds to report, on a monthly basis, project acquisition progress and disbursement information and activities. In the USA, most subnational governments do not have a central committee or agency monitoring public capital project acquisition; however, in practice, local governments are subject to state laws requiring financial audits and financial statements at the conclusion of the fiscal year. For example, the Government Accounting Standards Board recommends financial audit practices for states and localities according to Generally Accepted Accounting Principles. Note, however, that these financial audits are ex-post controls that take place after the fiscal year is over, and therefore may not be able to help these subnational governments detect waste and fraud in the early stages of capital project acquisition. Germany's system is similar to those of the subnational governments in the USA except that Germany's federal government also prepares an annual financial report in addition to those of its local jurisdictions.

Moldova, Thailand and Vietnam received ratings of *fair*. The three countries have line agencies and ministries responsible for monitoring capital projects, supervising project acquisition, and reporting progress to the central government. This ex-post auditing, however, is inferior to ex-ante auditing that can detect waste and fraud early. Thailand is the only country in this group that requires line agencies and ministries to report capital disbursements to the Bureau of Budget which then displays project status reports online. However, public capital projects financed through the annual budgeting process (monitored by the Bureau of Budget) is only a small percentage of total capital spending. Large capital projects are subject to a special built-in capital budgeting and approval process, but Thailand does not have a central

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

unit that tracks capital project acquisition and disbursement for these projects. In practice, the Ministry of Finance monitors large-scale projects financed by long-term debt, but the monitoring and tracking of progress is dispersed. There is no clearinghouse that provides information about approved capital projects, contributing to opaqueness and lack of transparency to the public.

The Moldovan and Thai governments have specific acts governing the public procurement process. In Thailand, Article 22 of the Privatization Act requires that line agencies responsible for public projects establish Monitoring Committees to monitor project execution. In Moldova, the Public Procurement Act created a public procurement agency to monitor contracted projects, verify that all public procurement processes comply with the procedures designated by the act, and provide reports on procurement contracts. The Moldovan government can improve its performance in this component by establishing a central agency to compile, track, and report all approved capital projects, not just those that are contracted out. Vietnam does not have a centralized committee or agency to monitor public projects and does not have any public procurement laws such as those in Thailand and Moldova. Like the USA, Vietnam's fiscal audit is an ex-post audit and is implemented for only large-scale capital projects.

Burkina Faso, Russia and Ukraine rank last among the case study countries in terms of centralized execution and project management practices, receiving ratings of *poor*. Burkina Faso and Russia simply do not have any centralized project monitoring processes, internal auditing practices, or public procurement rules or laws. The Ukrainian government has put in place internal auditing and project acquisition monitoring; the Accounting Chamber, Anti-Monopoly Committee and State Financial Inspection are responsible for tracking and supervising public project acquisition and capital disbursement nationwide. However, in practice, the Ukraine case study author notes that these three units do not perform these assigned functions. The Ministry of Economic Development and Trade is responsible for developing and maintaining project status reports for all investment programs. However, the case study author notes that once projects are started, they are rarely monitored or assessed. As a result, Ukraine is notorious for having projects that are rarely completed causing significant amounts of sunk costs in acquiring public infrastructure. As noted by the case study author, the World Bank (1997) estimated that since 1970, 60,000 projects were not finished and about 15,000 projects took at least 10 years to accomplish.

Infrastructure Maintenance

Vietnam, Korea, Thailand and Moldova received *good* ratings for the infrastructure maintenance component. These four countries have maintenance planning established; however, asset management practices in Vietnam and Korea are not very sophisticated. With the assistance of the European Union, the Moldovan government is currently developing an information system and inventory of all capital projects. For maintenance planning, the Thai government is the most sophisticated. Its National Social and Economic Development Board (NSEDDB) compiles, estimates and reports public infrastructure stock based on a perpetual inventory method. The NSEDDB uses this information and projections of future demand as a starting point for recommending the types of public investment for the country. However, as mentioned by the authors of the Thailand case study, in practice ministries and agencies tend to make projects appear to be consistent with the NSEDDB's plans so that the projects can be funded, making the NSEDDB project selection criteria ineffective. Thailand's maintenance funding process is also incomplete. While there are public resources available each year for repair, these resources are incorporated into the annual operating budget instead of being set aside for maintenance.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

The Moldovan government integrates maintenance funding into the annual budgeting process with maintenance funding annually determined based on depreciation rates of existing infrastructure. The Moldovan government emphasizes accounting for public capital assets based on historical records of investment, major repairs and upgrades, and depreciation rates, recognizing that such accounting information will help guide capital resource allocation and project selection. The Vietnamese government sets aside resources for public facilities in various sectors and separates maintenance allocation from annual budgeting.

Germany, Ukraine, and Uzbekistan were rated *fair* for this component. Since inheriting its public facilities from the former Soviet economy, the Ukrainian government has put some effort into asset management although it does not have in place maintenance planning and funding. The case study author notes that most of the public capital spending is to repair (rather than replace) aging facilities. Uzbekistan has a maintenance funding system. For example, the country maintains the Republican Road Fund in which earmarked revenue and surplus from natural resource exports are used to finance road maintenance. Germany's Basic Law requires the government to create and sustain a maintenance fund containing earmarked revenue and surplus general revenue. However, the case study author notes that in the last decade, Germany has faced problems in maintenance funding as public investment slowed and the country experienced infrastructure aging and backlog.

Albania, Taiwan, Burkina Faso, Russia and U.S.A received *poor* ratings for infrastructure maintenance. The Albanian government periodically assesses its capital stock, but the maintenance planning system is not well established. The country sets aside some maintenance funding, but only for roads and highways, and as noted in the country case study, even with maintenance funds being set aside, Albanian roads remain inadequate. Furthermore, because of the focus on transportation, infrastructure in other sectors are not maintained. The remaining governments rated as *poor* do not have any maintenance planning and funding systems. The authors of the case studies specifically mention inadequate maintenance performance in general, resulting in aging public infrastructure (subnational governments in the USA), useless public buildings and so called "mosquito buildings" (Taiwan), and inadequate public infrastructure (Burkina Faso and Russia).

INITIAL OBSERVATIONS

We are interested in the question of what drives differences in public capital management and budgeting practices across different countries. As a first step in answering this question we observe the case study countries' economic profile to identify patterns of relationships between economic performance and public capital management and budgeting practices. Table 2 presents the total scores for the countries' public capital management and budgeting processes, based on the evaluation rubric described in the previous section, along with categorization according to the International Monetary Fund (IMF) income group, total population in 2015, total GDP in 2015, per capita GDP in 2015 and per capita GDP in 1990. Simple visual inspection does not suggest any patterns to the relationships between a country's capital management and budgeting total score and economic performance measured as income group, GDP, and population size. We confirm our visual observation by performing correlation analysis. The statistical results (shown in Table 3) indicate no relationship between economic performance and the capital management and budgeting process.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Table 2. Summary of capital management and budgeting total scores and economic performance data for case study countries

Rank	Country	Capital Management & Budgeting Total Score	IMF Income Group*	2015 Population (million)**	2015 GDP (billion)***	2015 Per Capita GDP***	1990 Per Capita GDP****
1st	Korea	12	AE	50.7	1,740	34,314	8,276
1st	Vietnam	12	LIDC	91.7	536	5,849	939
3rd	Germany	11	AE	81.1	3,618	44,615	19,433
4th	Taiwan	10	AE	23.5	977	41,569	8,178
4th	Thailand	10	EM	65.1	1,020	15,662	4,298
4th	United States	10	AE	321.2	16,940	52,740	23,955
5th	Albania	9	EM	2.9	30	10,190	2,722
5th	Moldova	9	LIDC	4.1	22	5,454	4,162
6th	Uzbekistan	8	LIDC	31.3	284	9,078	1,985
7th	Ukraine	6	EM	42.8	395	9,238	6,763
8th	Burkina Faso	5	LIDC	18.5	27	1,444	546
8th	Russia	5	EM	144.3	3,363	23,303	8,013

Source: Authors' evaluation of capital management and budgeting practices; International Monetary Fund's Economic Outlook Database (2018); Population Reference Bureau (2015); and The World Bank (2018)

Notes:

* Income groups: Low income developing countries (LIDC), Emerging markets (EM), Advanced economies (AE); Retrieved from International Monetary Fund (2018)

** For mid-year 2015; from Population Reference Bureau (2015)

*** Financial data are in real USD based year 2011; from IMF (2018)

**** 1990 Per Capita GDP is in current USD; from The World Bank (2018)

In the economic development literature, the convergence hypothesis asserts that a country starting off its economy at a low-income level will grow faster than those starting off with higher income, and eventually, the former's economy will catch up with those of high-income economies (Barro & Lee, 1994; Baumol, 1986; Ben-David, 1996; Galor, 1996; Knack, 1996). This hypothesis is used to explain why some countries develop faster than others. However, as shown in the last row of Table 3, the cor-

Table 3. Correlation coefficients for the relationship between capital management and budgeting practices and economic performance

	Correlation Coefficient
Capital Management and Budgeting Total Score	1.000
IMF Income Group	0.389
2015 Population (million)	0.109
2015 GDP (billion)	0.159
2015 Per Capita GDP	0.427
1990 Per Capita GDP	0.273

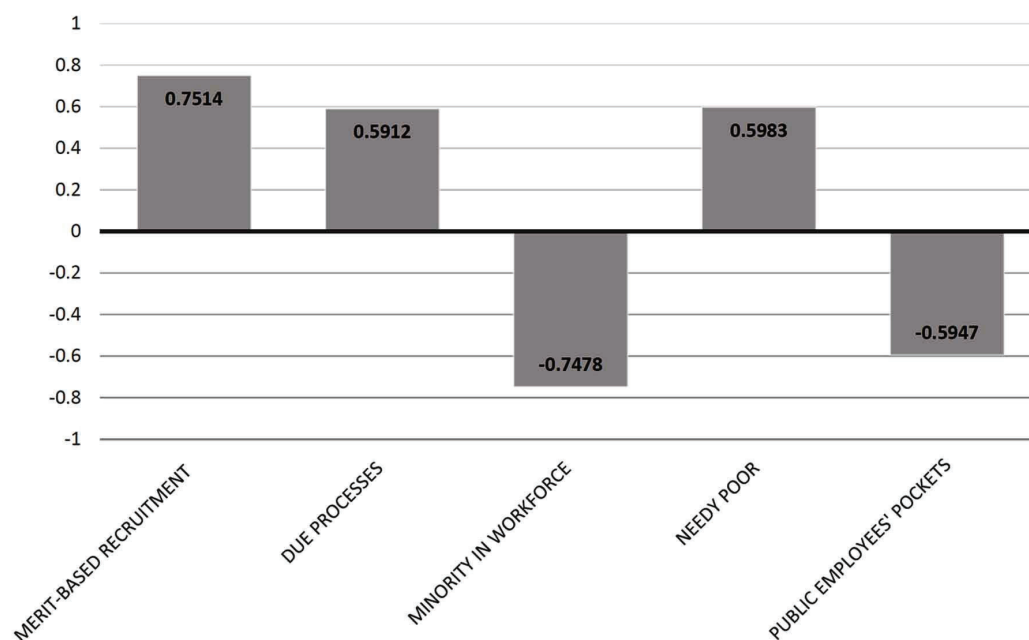
Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

relation between the 1990 GDP per capita and the total score for the capital management and budgeting process ($r = 0.273$) is not in the negative direction and is weak. We note that this simple correlation analysis is utilized to detect patterns and is not intended for statistical confirmation purposes due to the small number of case study countries.¹

Next, we observe a country's public administration institutions in order to find some clues about the relationship between public administration functions and structures, and the public capital management and budgeting process. To do this we obtained data from the Quality of Government (QoG) 2015 Expert Survey II (Dahlström, Teorell, Dahlberg, Hartman, Lindberg & Nistotskaya, 2015), which provides an assessment of the organizational design of public bureaucracies and bureaucratic behavior across countries.² Using our country case studies we examine the correlations between a country's public administration functions and structures (from the QoG 2015 Expert Survey II) and the capital management and budgeting total scores we assigned to that country. The goal of this exercise is to obtain some preliminary insights into factors that may explain why the quality of capital management and budgeting varies across countries. By looking at the sign, magnitude, and statistical significance of the correlation coefficients, we hope to develop some ideas about (1) the direction of the relationship between institutional factors and capital management and budgeting, (2) the strength of these relationships, and (3) unobservable factors that may affect capital management and budgeting practices.

Among the 59 variables included in the 2015 Quality of Government Expert Survey II, five public administration institutional variables were statistically significant ($p < .05$) and in the expected direction, exhibiting strong relationships between capital management and budgeting total scores and public administration institutions (see Figure 1). The five public administration institutions are: merit-based

Figure 1. Spearman's Rho exhibiting direction and magnitude of the relationship between capital management and budgeting total score and public administration institutional factors



Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

recruitment, due process in public human resource management, the extent to which minorities are represented in the public employee workforce, the percent to which public spending for needy poor recipients are received by needy poor groups, and the percent to which public spending for needy poor recipients go into public employees' own pockets.³

Case study countries that have a merit-based system for hiring and retaining public sector employees tend to have higher quality capital management and budgeting practices. Likewise, countries with due process in hiring, firing, promoting, and paying public sector employees tend to have higher quality practices. This is as expected given that capital management and budgeting require technical expertise and skills to perform activities such as revenue forecasts, debt affordability analysis, cost-benefit analysis, and ranking public projects based on a systematic scoring process. Merit-based recruitment and due process in human resource management tend to ensure the public workforce has skilled labor with technical expertise and, as a result, the management tools, procedures, and implementation processes these employees undertake will result in systematic capital management and budgeting practices.

The relationships between capital management and budgeting and whether public spending for the needy poor goes to the needy poor or into public employees' own pockets are also not surprising. In any objective resource allocation process, the allocation decision is focused on enhancing quality of life and targeting the needy poor reflects such a priority. If, for some reason, there is corruption in diverting public resource towards public employees themselves to be used for their own purposes, that tends to reflect capital management and budgeting practices that are relatively poor quality. Combined, these relationships suggest that capital management and budgeting practices may be better in countries where public-sector corruption is relatively low.

The relationship between minority representation in the public sector workforce and capital management and budgeting is negative with a relatively large magnitude, suggesting that diversity and pressure from a pluralistic society may contribute to weakening of the capital management and budgeting process. This is not surprising particularly in the context of capital management and budgeting practices that select projects and allocate resources based on economic analysis and reasoning, where the winners and losers of such objective practices may not correspond to the diverse wants of society and public employees seeking to meet these diverse interests.

We also examine the correlations between capital management and budgeting total scores and political, economic, and public sector factors included in the QoG Standard Dataset Project (Teorell, Dahlberg, Holmberg, Rothstein, Alvarado & Svensson, 2018). The QoG Standard Dataset consists of 2,100 variables compiled from 100 publicly-available data sources (e.g., from the World Bank, International Monetary Fund). We found several interesting relationships between the capital management and budgeting total scores and QoG Standard Dataset variables (statistically significant at .05 level, exhibiting relatively large magnitude and in the expected direction).⁴

Four variables are worth mentioning. First, the variable representing the share of government consumption to GDP has a large and significant correlation coefficient (-0.7929), suggesting that about 79% of the capital management and budgeting total score is negatively related to the share of government consumption to GDP. This negative relationship implies that countries whose governments consume relatively less on non-durable goods and services tend to have stronger capital management and budgeting practices. Conversely, the QoG Standard Dataset does not contain public investment data; however, since government spending includes public consumption and investment, we posit that it is therefore quite likely that the size of public investment (i.e., public capital spending) is related to the capital management and budgeting process.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Second, the share of merchandise imports to GDP has a large and significant correlation coefficient (-0.7005). This hints at issues related to a country's openness to trade, but since the share of merchandise exports to GDP is not statistically significant, we cannot conclude that the level of economic openness is related to capital management and budgeting. However, this variable suggests general patterns where a government that is saving-oriented (i.e., consumes less and imports less world merchandise) tends to have a better capital management and budgeting process. Government savings orientation may be an important clue for understanding factors underlying variations in the quality of capital management and budgeting in different countries.

Third, the correlation coefficient for the variable representing the number of years since the last amendment to the Constitution was adopted is positive (0.8023) and statistically significant suggesting that countries with stable laws tend to have higher quality capital management and budgeting practices. Finally, an additional public administration institutions variable, the Bayesian Corruption Index (a composite index of the perceived overall level of corruption and defined as the "abuse of public power for private gain" published by Transparency International and the World Bank), is negatively related to the capital management and budgeting total score (correlation coefficient of -0.7825). This suggests that public capital management and budgeting practices become weak in an environment where corruption is widespread.

An Emerging Theme

We further examine the relationship between capital management and budgeting practices to the share of government consumption. Specifically, Figure 2 shows the relationship between capital management and budgeting total scores (on the Y-Axis) and the share of government consumption to GDP (on the X-Axis), highlighting an emerging theme that comes out of this comparison of government consumption and public capital management and budgeting practices. As shown in Figure 2, the Albanian government is average in terms of its capital management and budgeting practices (total score of 9) and its share of government consumption (21%) is at about the average across all case study countries. Countries with shares of government consumption that are below the average tend to have above average capital management and budgeting total scores. For example, Vietnam and Korea have high capital management and budgeting total scores (total scores of 12) and below average government consumption to GDP (11% for Vietnam and 15% for Korea). Shares of government consumption were similarly below average for the USA, Thailand, and Taiwan, and correspondingly their capital management and budgeting practices were above average.

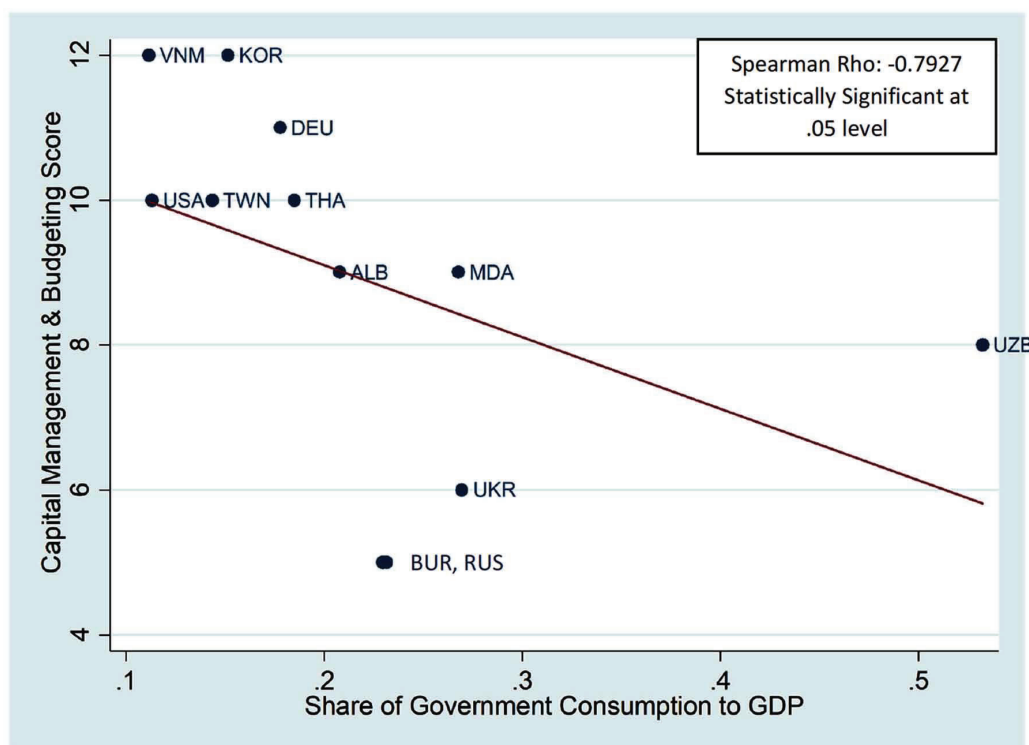
The same pattern manifests when looking at countries with shares of government consumption to GDP that are above the average. As Burkina Faso's profile illustrates, the share of government consumption is above average (23%) and the country's capital management and budgeting total score is below average (total score of 5). The former Soviet Union countries (with the exception of Moldova) and Burkina Faso are consistent with the emerging theme; their capital management and budgeting performance scores are all below average and their shares of government consumption are above average.

Given that transitioning economies are quite unique compared to the rest of the world in terms of government regimes, management culture, and other factors, we look at the profiles of the countries in this sub-group: Moldova, Russia, Ukraine, and Uzbekistan. As a whole these countries seem to conform to the emerging theme, but when individual countries are compared, the patterns are not consistent with the emerging theme. One likely explanation for this is the different levels and types of technical assistance

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Figure 2. Correlation between capital management and budgeting practices and share of government consumption to GDP

Source: Analysis by the authors



that these countries receive given their status as transitioning economies. For example, at present the Moldovan government is actively pursuing European Union membership. As presented in the case study, the country is receiving technical assistance from the European Union in setting up its management and budgeting processes. Significant parts of the capital management and budgeting total scores assigned to Moldova are the result of the recently established public budgeting and financial management rules and laws that resulted from this external technical assistance. Had the Moldovan government not received technical assistance, its capital management and budgeting total score would be well below average. Uzbekistan's capital management and budgeting total score was 8, and we would expect its shares of government consumption to be slightly above average. However, the country's capital management and budgeting process is unstable and depends on the levels of capital investment and the President's decisions that tend to be haphazard. Similarly, according to the emerging theme, Russia should have better capital management and budgeting practices than those of Ukraine since its share of consumption is less than those of Ukraine. However, data in Figure 3 shows the opposite. Based on this sub-group analysis, we recognize that we do not clearly understand these former Soviet Union countries, except the explanation that compared to the entire group they perform worse than the average and tend to have larger than average shares of government consumption (except for Moldova). Our limited country case studies are not enough to reveal significant themes in this subgroup. Furthermore, we believe that the countries in this group deserve special analysis and additional research is needed.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

A TENTATIVE THEORY OF PUBLIC INVESTMENT BEHAVIOR

Based on the extant literature in international development and public finance, coupled with our initial observations from comparing the case study countries, we develop a tentative theory for explaining variations in public capital management and budgeting processes across countries. With this tentative theory, which we call a tentative theory of public investment behavior, we also posit several propositions regarding antecedents and outcomes of the public capital management and budgeting process.

The practices recommended by the public finance literature suggest that to have a high-quality capital management and budgeting process, a government must have human capital with some degree of technical competency and expertise to conduct such complex tasks as financial planning and forecasting, cost-benefit analysis, systematic project ranking, and capital inventory analyses. According to the initial observations just discussed, we see a strong relationship between capital management and budgeting total scores and merit-based practices and due process in public sector recruitment, hiring, promotion and dismissal. Such processes are key for ensuring high levels of talent and expertise within public sector organizations. Employees bring to their organization important skills and expertise which in turn, set the management styles and work processes of the organization (Wright, 2004; Bloom, Genakos, Sadun, & Reenen, 2012). Collectively, talented and expert labor apply their skills and professional viewpoints to the work of the organization, resulting in more sophisticated working practices that are conducive to systematic decision-making processes (Wright, 2004; Bloom, Genakos, Sadun, & Reenen, 2012; Kontoghiorghes, & Kalomyra, 2009). Thus, our first two propositions within this tentative capital management and budgeting theory are stated as follows:

Proposition 1: The more extensive meritocratic recruitment and retention are practiced in a country's public sector human resource management, the better the country's quality of capital management and budgeting.

Proposition 2: The more due process is present in the country's public sector human resource management, the better the country's quality of capital management and budgeting.

A strong capital management and budgeting process not only requires a merit-based employment structure with an emphasis on due process, but also requires objective and ethical public sector employees. Not surprisingly, then, we observe a strong relationship between the quality of the capital management and budgeting process and levels of corruption. For example, our initial observations suggest that in a country where the capital management and budgeting process is of relatively high quality, the implementation of public programs and delivery of public services tend to successfully distribute resources to the needy poor. In contrast, in a country where the capital management and budgeting process is of relatively low quality, public program implementation and public service delivery tend to divert resources into public employees' pockets. Likewise, as mentioned above, a country with relatively poor capital management and budgeting practices would have a relatively high Bayesian Corruption Index.

The international development literature is mixed regarding the effects of corruption, suggesting that corruption may either 'grease' or 'sand' the wheels in terms of economic activities and economic development (see for example Ahmed & Asmaa, 2016; Aidt, 2009; Blackburn & Forgues-Puccio, 2009; DiRienzo & Das, 2015; Ibrahim, Kumi, & Yeboah, 2015; Méon & Sekkat, 2005; Saastamoinen & Kuosmanen, 2014). The 'greasing the wheels' hypothesis suggests that corruption expedites public program implementation while the 'sanding the wheels' hypothesis instead suggests that corruption impedes the

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

public service process. At the international level, Lambsdorff (2003) finds that corruption, especially with regards to capital spending, reduces efficiency in providing public infrastructure. Given that the systematic capital management and budgeting process requires accountability, public disclosure, and open-bidding processes in centralized execution and project management, it is not surprising that we observe higher quality capital management and budgeting practices in environments where corruption is generally not present. Thus, our third proposition is:

Proposition 3: The less corruption that exists in a country's public sector, the better the country's quality of capital management and budgeting.

In the entrepreneurial finance literature, scholars have studied angel investors' behavior and investment decision making (Maula, Autio, & Arenius, 2005; Maxwell, Jeffrey, & Lévesque, 2011; C. Mitteness, Sudek, & Cardon, 2012; C. R. Mitteness, Baucus, & Sudek, 2012; Smith, Harrison, & Mason, 2010; Wiltbank, Read, Dew, & Sarasvathy, 2009). Angel investors are wealthy individuals who act as informal venture capitalists investing own capital directly into early stage ventures (Wiltbank et al., 2009). Forrester (2014) finds that angel investors' decisions cannot be explained by traditional finance theories such as expectancy theory where cognitive processes are used in deliberation and decision making. Instead, because of information asymmetry, especially in terms of predicting future returns on investment, angel investors are influenced by cognitive biases formed through personal experiences, including risk perception (Forrester, 2014).

To deal with uncertainty, angel investors rely on heuristics to determine the level of cognitive process needed for instances of decision making. More specifically, angel investors must decide on the need for due diligence (i.e., activities, time, effort and resources to gather information on the potential investment) which often involves technical and complicated tasks such as background checks, analysis of the size of the target market, determination of growth potential, cash flow projection, and asset valuation (Forrester, 2014). There is evidence in the entrepreneurial finance literature that angel investors reduce information asymmetry by performing activities related to due diligence (Mason & Harrison, 2003; Stuart & Abetti, 1990) and that time spent on due diligence reduces such asymmetry, thus improving angel investment returns (Wiltbank & Boeker, 2007). More importantly, time spent on due diligence increases with the percentage of wealth invested by the angel investor (DeGennaro & Dwyer, 2014; Mitteness et al., 2012; Smith et al., 2010; Wiltbank & Boeker, 2007). Specifically, Wiltbank et al., (2009) find that due diligence was significantly and positively related to investment size; where more due diligence is performed, more money is being put into the new venture.

This connection between the practice of due diligence and investment behavior may be extended to the situation of public investment at the country level. In the analysis of the twelve country case studies presented in this book we see that countries with a meritocratic public workforce tend to have higher quality capital management and budgeting practices (equivalent to practicing more due diligence), which, in turn, relates to low consumption levels (equivalent to high investment levels). Wiltbank et al. (2009) also find that angel investors who perform due diligence become confident and tend to invest more than others. We would similarly reason that a country with a highly skilled workforce (recruited and retained through a merit-based system) would have the expertise to conduct reasonable due diligence (i.e., having systematic capital management and budgeting practices) that would result in high levels of public investment.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

The entrepreneurial finance literature also notes differences in how novice angel investors and experienced angel investors approach investment decision making. Specifically, novice angel investors perform more due diligence (e.g., spend more time asking questions) than do experienced angel investors (Smith et al., 2010). At the country level we can see parallels between novice angel investors and countries with a saving orientation. Novice investors have less experience and therefore emphasize due diligence as a way to overcome challenges arising from information asymmetry. Savings-oriented countries may emphasize due diligence and a systematic decision-making process for public investment to overcome challenges of information asymmetry that arise due to a strong focus on managing general consumption.

Based on applying findings from the entrepreneurial finance literature and our initial observations from the country case studies, our final three propositions are as follows:

Proposition 4: The greater the country's saving orientation, the better the country's quality of capital management and budgeting.

Proposition 5: The more extensive meritocratic recruitment and retention are practiced in a country's public sector human resource management, the higher the country's public investment level.

Proposition 6: The better the country's quality of capital management and budgeting, the higher the country's public investment level.

Figure 3 summarizes our tentative theory of public investment behavior that connects the extent to which a country undertakes due diligence in its public investment decision making (i.e., having a systematic capital management and budgeting process) to possible antecedents and outcomes. The arrows on the left side of Figure 3 show administrative factors that may influence the extent to which a country adopts high quality capital management and budgeting practices. These factors correspond to Propositions 1, 2, 3, and 4. For example, consistent with Propositions 1 and 2, a country with a skilled public workforce supported by a human resource management system that is merit-based and incorporates due process will tend to put in place a systematic capital management and budgeting process. High levels of corruption in a country can also result in strong opposition to putting in place a systematic capital management and budgeting process, as such a process involves practices that remove both subjectivity and opportunities for public sector officials and employees to personally benefit from public investment decisions. As such, countries with public investment decision making that takes place in an environment marked by corruption will have lower quality capital management and budgeting practices (Proposition 3).

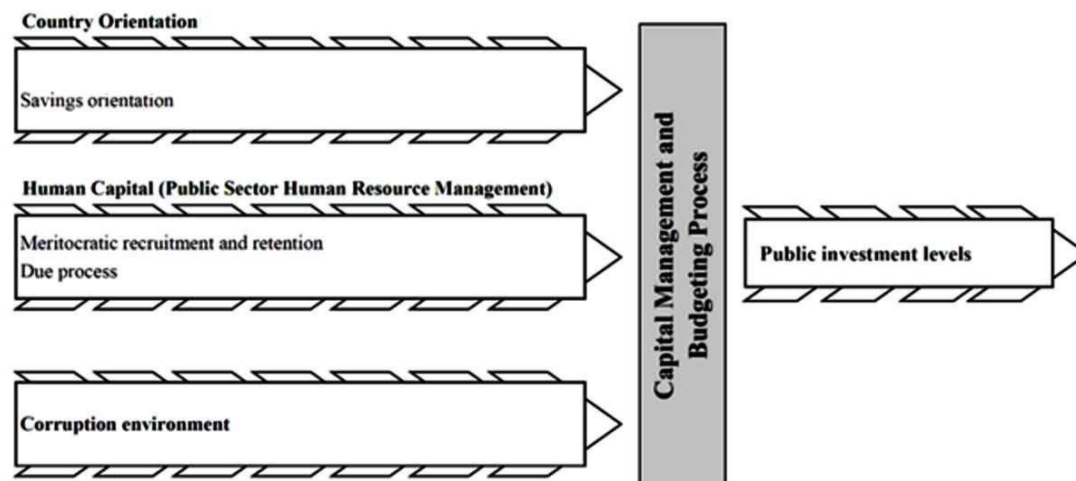
Approaches to public investment may also be contingent on risk aversion, levels of emphasis or experience, and resources. Countries with a saving orientation are more likely to commit time and resources to a systematic capital management and budgeting process, with an expectation of reducing risks, addressing uncertainty, and generating higher rates of return on its investment. In contrast, consumption-maximizing countries focus on consumption rather than investment and are reluctant to implement a systematic capital management and budgeting process when they are not expecting high rate of returns on their limited public investments relative to high transaction costs. We expect the opposite to hold as well, in that savings-oriented countries will, due to concerns about information asymmetry, put in place better quality capital management and budgeting practices (Proposition 4).

Figure 3 also shows that skillful public workforce and public investment level (i.e., investment orientation) are interrelated. Specifically, Proposition 5 suggests that public sector human resource management can result in relatively high level of public investment. Finally, Figure 3 suggests that when a country

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Figure 3. A tentative theory of public investment behavior

Source: Authors' syntheses



adopts and implements high quality capital management and budgeting process, its investment level tends to be relatively high because the due diligence practices in public investment makes the government become confidence in committing relatively high resources (Proposition 6). To summarize, Figure 3 suggests that the antecedents of the systematic capital management and budgeting process include saving orientation, meritocratic recruitment and retention in public sectors, due process in public sectors, and corruption environment while the outcome of the systematic capital management and budgeting process is a high level of public investment.

CONCLUSION

This book began with the description of a systematic capital management and budgeting process that is intended to be useful and responsive to the public's capital needs and supports a public infrastructure system that has reasonable cost compared to its useful life. This systematic process includes four components: long-term capital planning, budgeting and financial management, centralized execution and project management, and infrastructure maintenance. The book then provides twelve country case studies that describe public capital management and budgeting practices in Albania, Burkina Faso, Germany, Korea, Moldova, Russia, Taiwan, Thailand, Ukraine, Uzbekistan, USA, and Vietnam.

Analysis of these country case studies show that there are variations across the countries in terms of their public capital management and budgeting practices. Beyond these differences we also find that capital management and budgeting practices are related to various public sector factors. We use these initial observations to propose a tentative theory along with several propositions that connect the systematic capital management and budgeting process to possible antecedents. While we note that this theory is tentative, it does suggest some venues for further study of factors affecting how countries approach capital management and budgeting. Furthermore, the tentative theory offers a starting point for

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

thinking about implications of the systematic approach to capital management and budgeting in terms of key public investment outcomes (such as levels of public investment, quality and quantity of public infrastructure, private sector investment, etc.) and governance factors such as openness and transparency, corruption, and accountability.

REFERENCES

- Ahmed, F. G., & Asmaa, M. E. (2016). Growth and corruption in Arab countries: What type of relationship connects them? *Journal of Economics and International Finance*, 8(5), 44–55. doi:10.5897/JEIF2015.0675
- Aidt, T. S. (2009). Corruption, institutions, and economic development. *Oxford Review of Economic Policy*, 25(2), 271–291. doi:10.1093/oxrep/grp012
- Barro, R. J., & Lee, J.-W. (1994). Losers and winners in economic growth. *The World Bank Economic Review*, 7(s1), 267–298.
- Baumol, W. J. (1986). Productivity growth, convergence, and welfare: What the long-run data show. *The American Economic Review*, 1072–1085.
- Ben-David, D. (1996). Trade and convergence among countries. *Journal of International Economics*, 40(3–4), 279–298. doi:10.1016/0022-1996(95)01405-5
- Blackburn, K., & Forgues-Puccio, G. F. (2009). Why is corruption less harmful in some countries than in others? *Journal of Economic Behavior & Organization*, 72(3), 797–810. doi:10.1016/j.jebo.2009.08.009
- Bloom, N., Genakos, C., Sadun, R., & Reenen, J. V. (2012). Management practices across firms and countries. *The Academy of Management Perspectives*, 26(1), 23–42. doi:10.5465/amp.2011.0077
- Dahlström, C., Teorell, J., Dahlberg, S., Hartmann, F., Lindberg, A., & Nistotskaya, M. (2015). *The QoG Expert Survey II Report*. Retrieved December 10, 2018, from https://gupea.ub.gu.se/bitstream/2077/39869/1/gupea_2077_39869_1.pdf
- DeGennaro, R. P., & Dwyer, G. P. (2014). Expected returns to stock investments by angel investors in groups. *European Financial Management*, 20(4), 739–755. doi:10.1111/eufm.12002
- DiRienzo, C., & Das, J. (2015). Innovation and role of corruption and diversity: A cross-country study. *International Journal of Cross Cultural Management*, 15(1), 51–72. doi:10.1177/1470595814554790
- Ebdon, C. (2004). Capital management practices in U.S. counties. *Public Works Management & Policy*, 8(3), 192–202. doi:10.1177/1087724X03259604
- Ermasova, N. (2013). The improvement of capital budgeting at the state level in the USA. *Public Administration Review*, 2(2), 92–104.
- Forrester, R. C. (2014). *Behavioral finance: Factors influencing angel investor decisions*. (Unpublished doctoral dissertation). Kennesaw State University, Kennesaw, GA. Retrieved December 10, 2018, from <https://digitalcommons.kennesaw.edu/cgi/viewcontent.cgi?article=1639&context=etd>

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Galor, O. (1996). Convergence? Inferences from theoretical models. *Economic Journal*, 106(437), 1056–1069. doi:10.2307/2235378

Ibrahim, M., Kumi, E., & Yeboah, T. (2015). Greasing or sanding the wheels? Effect of corruption on economic growth in sub-Saharan Africa. *African Journal of Economic and Sustainable Development*, 4(2), 157–173. doi:10.1504/AJESD.2015.069858

International Monetary Fund. (2018). *Economic outlook database*. Retrieved October 15, 2018, from <https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx>

Knack, S. (1996). Institutions and the convergence hypothesis: The cross-national evidence. *Public Choice*, 87(3-4), 207–228. doi:10.1007/BF00118645

Kontoghiorghes, C., & Kalomyra, F. (2009). The association between talent retention, antecedent factors, and consequent organizational performance. *S.A.M. Advanced Management Journal*, 74(1), 29–36.

Lambsdorff, J. G. (2003). How corruption affects productivity. *Kyklos*, 56(4), 457–474. doi:10.1046/j.0023-5962.2003.00233.x

Mason, C. M., & Harrison, R. T. (2003). “Auditioning for money”: What do technology investors look for at the initial screening stage? *Journal of Private Equity*, 6(2), 29–42. doi:10.3905/jpe.2003.320037

Maula, M., Autio, E., & Arenius, P. (2005). What drives micro-angel investments? *Small Business Economics*, 25(5), 459–475. doi:10.1007/11187-004-2278-4

Maxwell, A. L., Jeffrey, S. A., & Lévesque, M. (2011). Business angel early stage decision making. *Journal of Business Venturing*, 26(2), 212–225. doi:10.1016/j.jbusvent.2009.09.002

Méon, P.-G., & Sekkat, K. (2005). Does corruption grease or sand the wheels of growth? *Public Choice*, 122(1-2), 69–97. doi:10.1007/11127-005-3988-0

Mitteness, C., Sudek, R., & Cardon, M. S. (2012). Angel investor characteristics that determine whether perceived passion leads to higher evaluations of funding potential. *Journal of Business Venturing*, 27(5), 592–606. doi:10.1016/j.jbusvent.2011.11.003

Mitteness, C. R., Baucus, M. S., & Sudek, R. (2012). Horse vs. jockey? How stage of funding process and industry experience affect the evaluations of angel investors. *Venture Capital*, 14(4), 241–267. doi:10.1080/13691066.2012.689474

Population Reference Bureau. (2015). *2015 world population datasheet*. Retrieved October 15, 2018, from https://www.prb.org/wp-content/uploads/2015/12/2015-world-population-data-sheet_eng.pdf

Saastamoinen, A., & Kuosmanen, T. (2014). Is corruption grease, grit or a gamble? Corruption increases variance of productivity across countries. *Applied Economics*, 46(23), 2833–2849. doi:10.1080/00036846.2014.914149

Smith, D. J., Harrison, R. T., & Mason, C. M. (2010). Experience, heuristics and learning: The angel investment process. *Frontiers of Entrepreneurship Research*, 30(2), Article 3.

Stuart, R. W., & Abetti, P. A. (1990). Impact of entrepreneurial and management experience on early performance. *Journal of Business Venturing*, 5(3), 151–162. doi:10.1016/0883-9026(90)90029-S

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

Teorell, J., Dahlberg, S., Holmberg, S., Rothstein, B., Alvarado, N., Svensson, P., & Svensson, R. (2018). *The Quality of Government Standard Dataset, version Jan18*. Gothenburg, Sweden: University of Gothenburg, The Quality of Government Institute. Retrieved December 10, 2018, from <https://qog.pol.gu.se/data/datadownloads/qogstandarddata>

Thomas, M. A. (2010). What do the worldwide governance indicators measure? *European Journal of Development Research*, 22(1), 31–54. doi:10.1057/ejdr.2009.32

Wiltbank, R., & Boeker, W. (2007). *Returns to angel investors in groups*. Lenexa, KS: Angel Capital Education Foundation. Retrieved December 10, 2018, from https://www.angelcapitalassociation.org/data/Documents/Resources/AngelGroupResarch/1d%20-%20Resources%20-%20Research/6%20RSCH_-_ACEF_-_Returns_to_Angel_Investor_in_Groups.pdf

Wiltbank, R., Read, S., Dew, N., & Sarasvathy, S. D. (2009). Prediction and control under uncertainty: Outcomes in angel investing. *Journal of Business Venturing*, 24(2), 116–133. doi:10.1016/j.jbusvent.2007.11.004

World Bank. (1997). *Public investment management report*. Washington, DC: The World Bank Group.

World Bank. (2018). *GDP per capita, PPP (current international \$), World Bank, International Comparison Program database*. Retrieved October 15, 2018, from <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD>

Wright, K. (2004). Personal knowledge management: Supporting Individual Knowledge Worker Performance. *Knowledge Management Research and Practice*, 3(3), 156–165. doi:10.1057/palgrave.kmrp.8500061

ENDNOTES

- ¹ We also want to determine the relationship between the 1960 per capita GDP and the Capital Management and Budgeting score (CMB). Unfortunately, the former Soviet Union member countries, which include almost half of the case study countries, do not have GDP data prior to 1990. Thus, we are unable to inspect the income convergence pattern using 1960 GDP data.
- ² The 2015 Expert Survey II is part of the Quality of Government (QoG) project sponsored by the Quality of Government Institute, University of Gothenburg, Sweden. The QoG Expert Survey is a longitudinal project to collect data on the organizational design of public bureaucracies and bureaucratic behavior in different countries. According to Dahlström et al. (2015), the purpose of the QoG Expert Surveys is to provide quantitative assessment of the organizational design of public bureaucracies and bureaucratic behavior across countries. Conceptually, the survey questionnaires were written based on Evans and Rauch's pioneering research on Weberian bureaucracies, New Public Management, and administrative impartiality. The 2015 Expert Survey II's respondents include 1,294 public administrators across 159 countries (Dahlström et al., 2015). The Quality of Government Institute compiled and updated the list of survey respondents, who are public administrators in each country (Dahlström et al., 2015). Each country has at least 3 public administrator respondents.

Summary, Initial Observations, and Getting to a Tentative Theory of Public Investment Behavior

- ³ These public administration institutions are operationalized by the QoG Expert Survey as follows:
- Merit-based recruitment: Public sector employees are hired via a formal examination system.
 - Due process in public human resource management: The practice of hiring, firing, promoting and paying public sector employees follows the provisions of the laws and other legal documents regulating these processes.
 - Minorities are represented in the public employee workplace: Key ethnic and religious groups in society are proportionally represented among public sector employees.
 - Public spending reaches the needy poor: The percentage of funds that would reach the needy poor in a hypothetical situation where a typical public sector employee is given the task to distribute an amount equivalent to USD 1000 per capita to the needy poor in the country.
 - Public spending goes into public employees' pockets: The percentage of funds that would go into the public employee's own pocket in a hypothetical situation where a typical public sector employee is given the task to distribute an amount equivalent to USD 1000 per capita to the needy poor in the country.
- ⁴ The complete list of the correlation coefficients for these 80 variables can be obtained from the editors.